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January 12, 2006

Kittitas County
Board of County Commissioners
Planning Commission

RE: Kittitas Valley Wind Power Project – Noise Issues Raised in Public Testimony

Dear Commissioners:

In response to questions raised at the public hearing on 1-11-06, I have prepared the following information to clarify the noise analysis presented in the DEIS and subsequent addendum and my technical report included in the proposed Findings of Fact submitted by the Applicant for the Kittitas Valley Wind Power Project.

As stated in my testimony before the Commission and Board on 1-10-06, the DEIS, the DEIS Addendum and my technical report included as Tab 12 in the Applicant's proposed Findings of Fact, the noise modeling and analysis conducted for the Kittitas Valley Wind Power Project (which was conducted using industry standard methodologies, namely ISO 9613-2 as referenced in my technical report, the DEIS and subsequent addendum) demonstrates that the proposed Project will, and indeed must, meet all applicable County and State regulatory requirements for noise.

It is important to understand the difference between a sound pressure level (or noise level) and a sound *power* level. A sound *power* level (commonly abbreviated as PWL or Lw) is analogous to the wattage of a light bulb; it is a measure of the acoustical energy emitted by the source and is therefore independent of distance. A sound pressure level (commonly abbreviated as SPL or Lp) is analogous to the brightness or intensity of light experienced at a specific distance from a source and is influenced by the strength of the source as well as the distance from the source and the surroundings. Sound pressure level is measured directly with a sound level meter and is what our ears hear. Sound pressure levels should always be specified with a location or distance from the noise source.

Sound power level data is used in acoustic models to predict sound pressure levels. This is because sound power levels take into account the size of the acoustical source and account for the total acoustical energy emitted by the source. For example, the sound pressure level 15 feet from a small radio and a large orchestra may be the same, but the sound power level of the orchestra will be much larger because it emits sound over a much larger area. Similarly, a 2-hp and 2,000-hp pumps can both achieve 85 dBA at 3 feet (a common specification) but the 2,000-hp pump will have significantly larger sound power level. Consequently the noise from the 2,000-hp pump will travel farther.

Regulations, including those governing noise limits in Kittitas County and the State of Washington, are always in terms of sound pressure level (noise level).

As stated on page 2 of our acoustical analysis (Tab 12), the sound power level of 105.3 dBA was used in the model. There is often confusion about sound power level and sound pressure level as discussed above. Sound pressure level (Lp), is what is measured with a meter and is what you hear. The sound power level will ALWAYS be a higher number than the sound pressure level that is measured. This is because sound power takes into account the size of the source. The sound power level of the turbine is NOT the sound level you would measure or hear immediately at the turbine. The noise level at the turbine will not be 105 dBA, it will be much less - you are able to hold a conversation at the base of turbines and OSHA does not require hearing protection for workers working outside of the turbine.

I hope this clarifies the difference between sound power and sound pressure levels.

Sincerely,

CH2M HILL

Mark Bastasch, P.E.
Lead Acoustical Engineer